

**İSTANBUL TEKNİK ÜNİVERSİTESİ**  
**Fen Edebiyat Fakültesi - Fizik Mühendisliği Bölümü**  
(<http://www.fizik.itu.edu.tr/turhan/asm/>)

**FIZ 434E Microprocessors CRN 20139**

2020-2021 Spring

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**Lecture** : Monday 13:30 – 15:30 (Online)

**Laboratory** : Monday 15:30 – 17:30 (Online)

**Office Hours** :

**Textbook:**

*Beginners Introduction to the Assembly Language of ATMEL-AVR-Microprocessors*

*Atmel AVR Microcontroller Primer: Programming and Interfacing*, ISBN: 9781598295429

*Atmel AVR (ATtiny2313) Programlama*, Abdurrahman Taşbaşı ISBN 9789758834242

*AVR An Introductory Course*, John Morton, ISBN: 0 7506 56352

*Mikroişlemciler, mikrobilgisayarlar*, Eşref Adalı, Birsen Yayınevi



**Course Outline**

Week		Topic
1	1 March 2021	Microcontroller Basics and Programming Concepts
2	8 March 2021	Microcontroller Instruction Sets and Assembler
3	15 March 2021	Hardware and Software setup and Assembler Coding - Memory and Registers
4	22 March 2021	Assembler Coding (2) – Stack and Sub Functions, I/O Ports
5	29 March 2021	Assembler Coding (3) – Bit Manipulating, Loop Cycle Calculation
6	5 April 2021	Assembler Coding (4) – Timer Execution
7	12 April 2021	I/O and 1602 LCD
8	19 April 2021	Sequence control and Step Motor
9	26 April 2021	Timer and PWM (Pulse width Modulation) and Servo Motor
10	3 May 2021	Midterm
	10 May 2021	Semester Break
11	17 May 2021	Serial Communication (SPI, I2C, 1-wire)
12	24 May 2021	Serial Communication (SPI, I2C, 1-wire)
13	31 May 2021	Advanced coding – Mixing C and asm
14	7 June 2021	Introduction to PID Control

**Quizzes:** Minimum 3 Oral or written quiz.

**Homework:** Minimum 3 homework to compensate the laboratory before or after the laboratory session.

**Laboratory:** Consist of 10 projects that may be varied or extended during the laboratory session.

**Date**

Midterm : 3 May 2021

Final Exam :

**Grading:**

Midterm : 30%

HW : 15%

Quizzes : 15%

Final Exam : 40%

**Final Exam requirement:** Minimum a 25% out of 60% (MT, HW, Quiz) is required to attend the Final Exam.

Students that are not able get the minimum requirement will receive 'VF'.

**Academic Integrity**

Students who cheat during an exam or on laboratory session will receive a grade of FF in the course.